JULY 1911 VOL. 33 No. 7

THE JOURNAL

OF

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

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The professional papers contained in The Journal are published prior to the meetings at which they are to be presented, in order to afford members an opportunity to prepare any discussion which they may wish to present.

The Society as a body is not responsible for the statements of facts or opinions advanced in papers or discussions. C55.

THE JOURNAL

OF

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

VOL. 33 JULY 1911 NUMBER 7

RESOLUTIONS OF THANKS TO THE INSTITUTION OF MECHANICAL ENGINEERS

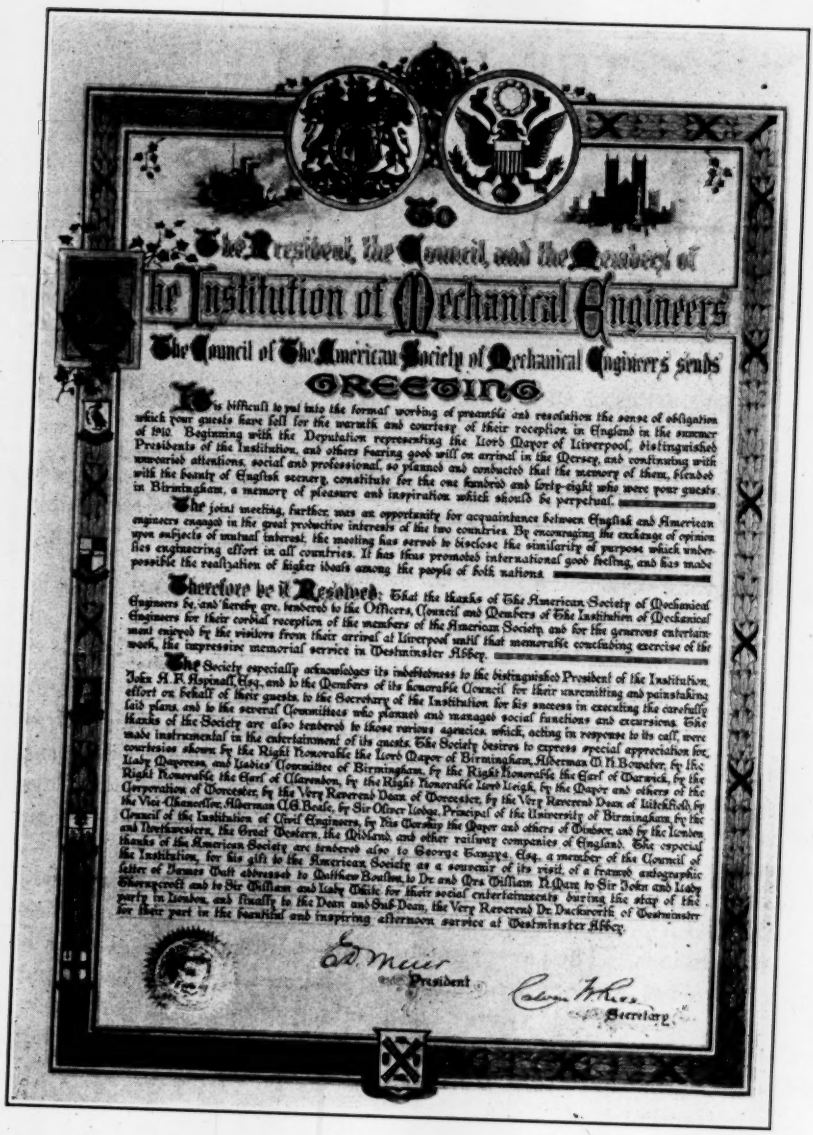
The members of the Society enjoying the hospitality so generously offered at the English meeting are sending to The Institution of Mechanical Engineers beautifully engrossed resolutions of thanks, a photograph of which appears on another page.

THE SPRING MEETING

The Spring Meeting was held at Pittsburg, Pa., May 30 to June 2, 1911, with an attendance of 307 members and 353 guests. Most of the social gatherings were held at the Hotel Schenley, where the registration headquarters were maintained, but the business meetings and professional sessions were held in the lecture hall of the Carnegie Institute and in the Carnegie Technical Schools.

This meeting was an unusually strong combination of pleasant social features, interesting technical excursions and valuable professional sessions. The papers were of unusual interest, and in spite of many other attractions the professional sessions were all well attended.

The local membership were very effectively organized into an executive committee, E. M. Herr, Chairman; with sub-committees on finance, George Mesta, Chairman; entertainment, J. M. Tate, Jr., Chairman; hotels, C. B. Albree, Chairman; printing and publicity, Morris Knowles, Chairman; and transportation, D. F. Crawford, Chairman. These committees contributed much to the success of the meeting by the painstaking manner in which they provided for the comfort and entertainment of the visiting members and guests.



To
The President, The Council, and the Members of
The Institution of Mechanical Engineers

The Council of The American Society of Mechanical Engineers sends

GREETING

It is difficult to put into the formal wording of preamble and resolution the sense of obligation which your guests have felt for the warmth and courtesy of their reception in England in the summer of 1910. Beginning with the Deputation representing the Lord Mayor of Liverpool, distinguished Presidents of the Institution, and others bearing good will on arrival in the Mersey, and continuing with unwearied attentions, social and professional, so planned and conducted that the memory of them, blended with the beauty of English scenery, constitute for the one hundred and forty-eight who were your guests in Birmingham, a memory of pleasure and inspiration which should be perpetual.

The joint meeting, further, was an opportunity for acquaintance between English and American engineers engaged in the great productive interests of the two countries. By encouraging the exchange of opinion upon subjects of mutual interest, the meeting has served to disclose the similarity of purpose which underlies engineering effort in all countries. It has thus promoted international good feeling, and has made possible the realization of higher ideals among the people of both nations.

Therefore be it Resolved: That the thanks of The American Society of Mechanical Engineers be, and hereby are, tendered to the Officers, Council and Members of the Institution of Mechanical Engineers for their cordial reception of the members of the American Society, and for the generous entertainment enjoyed by the visitors from their arrival at Liverpool until that memorable concluding exercise of the week, the impressive memorial service in Westminster Abbey.

The Society especially acknowledges its indebtedness to the distinguished President of the Institution, John A. F. Aspinall, Esq., and to the Members of its honorable Council for their unremitting and painstaking effort on behalf of their guests, to the Secretary of the Institution for his success in executing the carefully laid plans, and to the several Committees who planned and managed social functions and excursions. The thanks of the Society are also tendered to those various agencies, which, acting in response to its call, were made instrumental in the entertainment of its guests. The Society desires to express special appreciation for courtesies shown by the Right Honorable the Lord Mayor of Birmingham, Alderman C. H. Bowater, by the Lady Mayoress, and Ladies' Committee of Birmingham, by the Right Honorable the Earl of Warwick, by the Right Honorable the Earl of Clarendon, by the Right Honorable Lord Leigh, by the Mayor and others of the Corporation of Worcester, by the Very Reverend Dean of Worcester, by the Very Reverend Dean of Lichfield, by the Vice Chancellor, Alderman C. G. Beale, by Sir Oliver Lodge, Principal of the University of Birmingham, by the Council of the Institution of Civil Engineers, by His Worship the Mayor and others of Windsor, and by the London and Northwestern, the Great Western, the Midland, and other railway companies of England. The especial thanks of the American Society are tendered also to George Gangee, Esq., a member of the Council of the Institution, for his gift to the American Society as a souvenir of its visit, of a framed autographic letter of James Watt addressed to Matthew Boulton, to Dr. and Mrs. William H. Dean to Sir John and Lady Isherwood and to Sir William and Lady White for their social entertainments during the stay of the party in London, and finally to the Dean and Sub-Dean, the Very Reverend Dr. Duckworth of Westminster for their part in the beautiful and inspiring afternoon service at Westminster Abbey.

Ed. Muir
President

Secretary

RESOLUTION OF THANKS TO THE INSTITUTION OF MECHANICAL ENGINEERS

Registration proceeded during the morning and afternoon of May 30, and in the evening an informal reunion was held by the Local Committee, which gave opportunity for the renewal of acquaintances and the making of new ones. A pleasant feature of the reunion was the presentation to President Meier of an engrossed testimonial of personal esteem and appreciation of his distinguished military and engineering services, by a group of friends in the Society on the occasion of his seventieth birthday. C. J. H. Woodbury made the presentation in the following words:

The flight of time is so noiseless that it requires anniversaries to mark its progress, and at a meeting of engineers in Boston a few weeks ago, it was remarked that you would have a notable anniversary on this occasion which ought to be recognized in a manner similar to that of the seventieth birthday of several of your associates and predecessors, and the matter was placed in the hands of a committee of your fellow-members from various parts of this country.

Your career has been indeed a notable one in its facility of doing many things and doing them well.

In the service of your country in both cavalry and artillery, you became a part of movements of national history. In the reorganization of the militia of your State, you became a force in the maintenance of law and order.

It is, however, in the greater victories of peace that we have come more closely in touch with your career as an engineer.

You have been connected with the great cotton industry in making improvements in baling the raw material, in mill construction, and also that of the textile machinery which produces the finished product.

In the great problem of transportation you have been connected with locomotive practice and railway management.

The functions of the engineer as an economist have been wrought by you yourself in the generation of steam and in the more radical innovations of the internal combustion engine.

But this recital of deeds well done is trite in comparison with that of the respectful tribute which we give to your sterling manhood which has endeared you to those with whom you have been associated.

Accept then, this engrossed testimonial briefly stating our felicitations; and this will be followed in due time by a folio containing the names of those taking part in this testimonial, and we ask you to give sittings to an artist whose portraiture will I trust be worthy of the subject.

In accepting the testimonial Colonel Meier replied as follows:

DR. WOODBURY AND FRIENDS, MEMBERS OF THE AMERICAN SOCIETY MECHANICAL ENGINEERS:

I receive at your hands this testimonial of friendship and esteem with feelings of deep gratitude and honest pride: gratitude that so many friends in

our great Society feel so warmly towards me as to unite in this cordial congratulation; pride in the knowledge that my honest endeavor to do sound engineering work is appreciated by colleagues, who, as I see by the names of your committee, represent all sections of our country.

I have always believed and have acted on the conviction that the first question for an engineer is to determine what his duty is and then to do it with his whole heart; and that he who does his duty need not worry about his rights.

I have not always succeeded in my work but I have at least aimed high. I fully realize that in receiving the honors you bestow on me, I am acting as a representative of many colleagues whose good work has made success possible, and I accept them in the proud feeling that they are the spontaneous offerings of men in that noble profession to which the marvelous development of this Union in all the arts of peace is mainly due.

I feel that by your gracious act you impose on me the welcome duty to remain in harness for a decade or two more, or rather as long as I can be of service to engineers. Again with a full heart, I thank you and your associates.

The testimonial, a photograph of which is shown on the opposite page, reads as follows:

To Colonel Edward Daniel Meier:

The undersigned Committee of your fellow members of The American Society of Mechanical Engineers, on behalf of those associated with them, tender to you their cordial regards in commemoration of your seventieth birthday, in appreciation of your distinguished career in military service and in engineering, to which you have made many notable contributions, and in which you have established an honorable name.

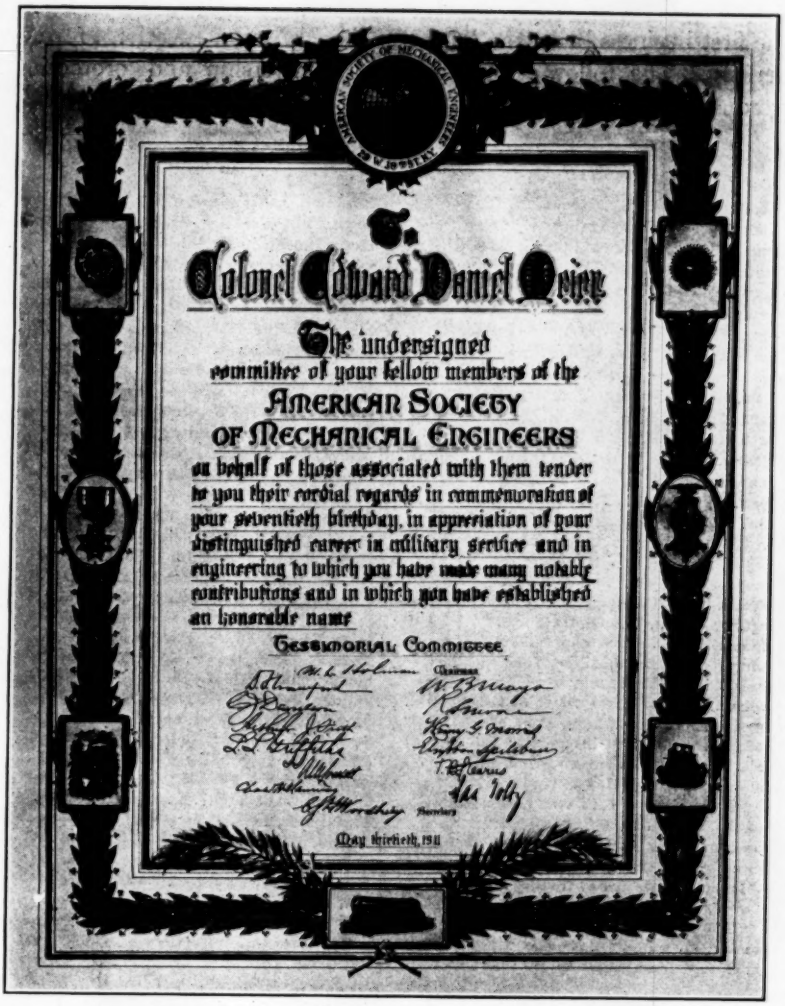
M. L. Holman, *Chairman*

C. J. H. Woodbury, *Secretary*

David F. Crawford
Charles J. Davidson
Arthur J. Frith
Leonard L. Griffiths
Andrew M. Lockett
Charles H. Manning
William Benson Mayo
R. S. Moore
Henry G. Morris
E. Gybbon Spilsbury
Thomas B. Stearns
Max Toltz

May 30, 1911.

On the opening day also, many members took the opportunity of visiting the exhibit of the Foundry and Machine Exhibition Company, originally provided for the convention of the American Foundrymen's Association during the previous week and held over for the benefit of the members of this Society.


Colonel Edward Daniel Meier
The undersigned
committee of your fellow members of the
AMERICAN SOCIETY
OF MECHANICAL ENGINEERS
on behalf of those associated with them tender
to you their cordial regards in commemoration of
your seventieth birthday, in appreciation of your
distinguished career in military service and in
engineering to which you have made many notable
contributions and in which you have established
an honorable name
TESTIMONIAL COMMITTEE
Chairman
May thirtieth, 1911

TESTIMONIAL PRESENTED TO COL. E. D. MEIER

WEDNESDAY MORNING, JUNE 1—BUSINESS AND PROFESSIONAL SESSION

The meeting was called to order at ten o'clock by President Meier, the first business being the report of the Tellers of Election to Membership. The following elections to membership and promotions were announced by the President:

MEMBERS

Albert, Calvin Dodge, Ithaca, N. Y.
Almquist, Karl, New York,
Arnold, Anthony Brown, Boston, Mass.
Baquet, Camille, Jr., Williamsport, Pa.
Bayne, George Henry.
Berresford, Arthur W., Milwaukee, Wis.
Blair, William Richard, Webster Groves, Mo.
Bonnett, Louis Blake, Elizabeth, N. J.
Cole, Fred Baker, Boston, Mass.
Cross, Charles Norman, Palo Alto, Cal.
Dallis, Park Andrew, Atlanta, Ga.
Davis, Leon Keith, Providence, R. I.
D'Olier, William Livingston, Philadelphia, Pa.
Donnelly, James Alfred, New York.
Drew, Wilbert Shepard, Logan, Utah.
Ellis, Halcolm, Newark, N. J.
Ford, William Lucas, Boston, Mass.
Forgee, Frederick Angus, New York.
Forsburg, Henry A., Berkeley, Cal.
Francis, Isaac Hathaway, Jr., Philadelphia, Pa.
Gartley, Alonzo, Honolulu, Hawaii.
Gilbert, E. E., Schenectady, N. Y.
Going, Charles Buxton, New York.
Gordon, Albert Anderson, Jr., Worcester, Mass.
Graham, William Harvey, Sydney Mines, B. C.
Greenwall, Walter L., Milwaukee, Wis.
Hall, Harris Forster, Chicago, Ill.
Hall, Walter Atwood, Swampscott, Mass.
Hammond, Myram Hance, Hudson, N. Y.
Hawthorne, Primm R., Battle Creek, Mich.
Hobbs, Franklin Warren, Boston, Mass.
Houchin, Ernest A., Brooklyn, N. Y.
Howell, Sylvester S., Chicago, Ill.
Jamieson, Charles Clark, Hoosick Falls, N. Y.
Johnson, John Samuel Adolphus, Blacksburg, Va.
Johnson, Raymond D., Niagara Falls, N. Y.
Johnston, William Atkinson, Boston, Mass.
Kendrick, J. W., Chicago, Ill.
Lamar, Philip Rucker, Augusta, Ga.
Law, Frank E., New York.
Leisen, Theodore Alfred, Louisville, Ky.
Lewis, Frederick Humphreville, Birmingham, Ala.
Lindberg, Fritz Albin, Chicago, Ill.
Longacre, Fredrieck van Duzer, New York.
Maguire, Jeremiah De Smet, New York.
Morse, Arthur Holmes, Cincinnati, O.
Nailler, Raymond Frederick, Elyria, O.
Newman, Martin Freeze, Pittsburg, Pa.
Norton, Arthur Edwin, Cambridge, Mass.
Olivenbaum, John Emmanuel, Cleveland, O.
Parrock, H. P., Buffalo, N. Y.
Perkins, Julius A., New York.
Reid, Joseph Snively, Belmont, N. Y.
Riege, Rudolph, Stamford, Conn.
Rollins, William Benjamin, Kansas City, Mo.
Rowell, Henry K., Waltham, Mass.
Sankey, Capt. H. Riall, London, England.
Scott, Charles Felton, Pittsburg, Pa.
Sessions, Edson O., Chicago, Ill.
Smith, Albert Samuel, Boston, Mass.
Stanley, Frank A., Stapleton, S. I., N. Y.
Stoddard, Elgin, San Francisco, Cal.
Straub, C. Lee, Port Richmond, N. Y.
Sulzer, George H., Arlington, N. J.
Sweet, Ernest E., Detroit, Mich.
Thiemer, William H., Cleveland, O.
Thorkelson, Halsten Joseph, Madison, Wis.
Veness, Alfred E., Bridgeport, Conn.
Vosbury, W. DeWitt, Philadelphia, Pa.
Whitney, Clarence Edgar, Hartford, Conn.
Whitney, William S., Lawrence, Mass.
Wilkie, Donald Cook, Seremban, Federated Malay States.
Woodman, George A., Chicago, Ill.

PROMOTION TO MEMBERS

Alexander, Ludwell Brooke, New York.
Barstow, Francis L., Mittineague, Mass.
Brooks, J. Ansel, Providence, R. I.
Cluett, Sanford L., Hoosick Falls, N. Y.
Cole, Arthur Williams, Lafayette, Ind.
DeCazenove, Louis Albert, Jr., Wilmington, Del.
Dixon, Charles Francis, New York.
Fox, R. E., Jr., New York.
Gay, Harry, Boston, Mass.
Kenney, Lewis Hobart, Philadelphia, Pa.
Klein, Arthur Warner, Bethlehem, Pa.
Matthews, Fred. Elwood, New York.

PROMOTION TO MEMBERS—CONTINUED

Rautenstrauch, Walter, New York.
Ray, David H., New York.
Ruckes, Joseph John, Jr., Chicago, Ill.
Rutherford, Eugene W., Brooklyn, N. Y.
Sheperdson, John William, Johnstown, Pa.
Van Valkenburgh, Ralph D., Scranton, Pa.
White, John Culbertson, Madison, Wis.
Wyer, Samuel S., Columbus, O.
Yarnall, Daniel Robert, Philadelphia, Pa.
York, Robert, Memphis, Tenn.

ASSOCIATES

Boblett, Kinderman M., Toledo, O.
Hunt, Samuel J., St. Louis, Mo.
Israel, Charles Henry, Baltimore, Md.
Klockars, Charles Oscar, Newark, N. J.
McIntosh, Walter S., West Roxbury, Mass.

JUNIORS

Andrei, Camillo, Milan, Italy.
Arter, Wilbur D., Mt. Vernon, N. Y.
Bausch, Carl L., Rochester, N. Y.
Briggs, Leroy Edmund, Boston, Mass.
Buck, Lucien, Canton, N. C.
Burroughs, Joseph Howell, Jr., Westmont, Pa.
Cariss, Carington Carysfort, London, Ontario, Canada.
Clayton, Jean Paul, Urbana, Ill.
Cullen, William Vincent, Buffalo, N. Y.
Dennis, Basil Wrenn, Muskogee, Okla.
Douglas, Walter Cooley, New York.
Downes, Nate Worswic, Kansas City, Mo.
Dunsford, Jan R., Alliance, O.
Fabens, Andrew Lawrie, New Kensington, Pa.
Finch, Ellis Jerome, New York.
Flickinger, Harrison William, Clairton, Pa.
Gamble, William John, Buffalo, N. Y.
Garrahan, Frederick Benton, West New Brighton, N. Y.
Gates, John George, Port Chester, N. Y.
Hall, Carl Albe, Concord, N. H.
Hartwell, Arthur Edward, Houston, Tex.
Hatman, Julius G., Kansas City, Kan.
Hider, George Turner, Greenloch, N. J.
Honywill, Albert William, Jr., New Haven, Conn.
Howard, Henry Sherwin, San Francisco, Cal.
Hubbard, Carleton Waterbury, Greenwich, Conn.
Humes, W. Sharon, Chicago, Ill.
Humphrey, Charles Scranton, South Bethlehem, Pa.
Knox, Clarence M., Hartford, Conn.
Koester, Herman, Waterbury, Conn.
Lindquist, Eric Adolf, Pottstown, Pa.
Loeb, Leo, Troy, N. Y.
Lydecker, Kenneth, New York.
McCollum, Caleb Addison, Wilkinsburg, Pa.
Magrath, Charles Bolton, Boston, Mass.
Mann, Harvey Blaine, Philadelphia, Pa.
Marshall, John Henderson, Diamon City, Alta., Canada.
Meyer ,Erwin Charles, New York.
Milner, Bert Branson, Philadelphia, Pa.
Mullhaupt, Alfred, Jr., St. Marys, Pa.
Munson, Stanley, South Bend, Ind.
Murphy, Thomas Robert Hoysted, New York.
Murphy, William T., Providence, R. I.
Nickerson, John Winslow, Saylesville, R. I.
Packard, Horace Nelson, Milwaukee, Wis.
Prout, Henry Byrd, New York.
Randall, John Arthur, Brooklyn, N. Y.
Rea, James Childs, Pittsburg, Pa.
Rentschler, Gordon Sohn, Hamilton, Ohio.
Rowe, Don Ray, Dayton, O.
Ruddy, William, Hoosick Falls, N. Y.
Sawyer, Luke Eugene, Brighton, Mass.
Schiefer, Fred. William, Buffalo, N. Y.
Stix, Lawrence Cullman, Cudahy, Wis.
Tallmadge, Webster, Brooklyn, N. Y.
Towne, Willis Lyman, Southbridge, Mass.
Truette, Arthur Pierce, Brookline, Mass.
Wentworth, Reginald Andrew, Southbridge, Mass.
Zimmermann, William Frederick, Newark, N. J.

The following amendment to C 21 of the Constitution was proposed by the Committee on Meetings in New York, which will be acted upon later in the usual manner:

Members of all grades residing in New York and vicinity and represented by the Committee on Meetings in New York City, should have the privilege and authority by majority vote of such membership to increase their annual dues by the sum of $3.00, such increase to be applied to financing such entertainment features of the Annual Meetings in New York City and its own local meetings as their Committee on Meetings in New York City may elect.

Reports were received from the Committee on Identification of Power House Piping and from the Committee on Standard Flanges. The former was published in The Journal for June 1911, and the latter was distributed in pamphlet form. No action was taken on either of these reports, pending the receipt of discussion, which may be received up to August 1.

Announcement was made that the Society had been invited to meet in 1912 at St. Paul, Cleveland and Baltimore. The claims of each city to consideration were set forth and the members present were asked to indicate to the Council their preferences. Following the receipt of these expressions the Council carefully considered the matter and finally decided that the Spring Meeting of 1912 should be held in Cleveland. This city presents many points of general and industrial interest, and arrangements for the meeting will be in charge of a large and active organization of engineers.

The remainder of the session was devoted to the presentation and discussion of three papers on various phases of the mechanical engineering of cement manufacture. The first of these papers was upon Some Problems of the Cement Industry, by W. S. Landis, of South Bethlehem, Pa., outlining the directions in which improvements in processes must take place and calling attention to some of the ways in which better economy is being obtained abroad. The author stated that the development of the cement industry was dependent on better engineering, and he invited the attention of mechanical engineers to the unsolved problems.

W. H. Mason, of Stewartsville, N. J., then presented his paper on The Edison Roll Crushers, in which were set forth the theories on which Mr. Edison based his development of this apparatus for reducing the cost of quarrying and crushing stone. The machinery was described in detail and data were given regarding horsepower required, cost of maintenance, and time lost due to repairs over a period of years.

L. L. Griffiths then followed with his paper on Power and Heat Distribution in Cement Mills, in which he gave data regarding five different types of power equipment, together with unit costs and outputs of the various types. These papers were discussed by F. B. Gilbreth, R. K. Meade, W. R. Dunn, H. Struckmann, C. J. Reilly, G. P. Hemstreet, F. L. Schwenk, H. E. Brown, W. B. Ruggles, W. M. Kinney, and Paul C. Van Zandt.

At the close of this session it was announced that a committee was being formed, with the coöperation of the Association of American

Portland Cement Manufacturers, to conduct investigations, secure papers and reports and to hold meetings on questions concerning the mechanical engineering features of the cement industry. Considerable interest was shown in this movement and it is believed that great progress may be made through the efforts of such a committee.

WEDNESDAY AFTERNOON

Immediately following the adjournment of the morning session, a special train conveyed the members and guests from the Union Depot to the works of the Universal Portland Cement Company, at Universal, Pa., where guides conducted the party through the plant, which is producing 12,000 barrels of cement per day, using slag from the Bessemer furnaces of the Carnegie Steel Company, and electric power generated from blast furnace gas at the Carrie furnaces of the Carnegie Steel Company. On the return a stop was made at East Pittsburg, where the party was shown through the works of the Westinghouse Electric & Manufacturing Company and of the Westinghouse Machine Company adjoining. Opportunity was given to inspect the large electric locomotives being built for the Pennsylvania Railroad, as well as steam turbines and gas engines in various stages of construction. Owing to the short time available for this excursion, luncheon was provided on the train.

In the evening two well-attended sessions were held simultaneously. One of these, the Machine Shop Session, was held in the lecture hall of Carnegie Institute, while the Gas Power Section met in the Carnegie Technical School.

MACHINE SHOP SESSION

The first three papers, constituting a symposium on the subject of the production of small interchangeable parts, were presented and discussed together.

John Calder, of Ilion, New York, under the title The Assembly of Small Interchangeable Parts, treated the subject broadly, with special reference to the methods used by the Remington Typewriter Company, calling attention to the importance of proper design as affecting the economical production of the parts, and outlining the methods used in preparing for the production of each part, in fixing the rate, and in dividing the labor to the best advantage.

The second paper, The Process of Assembling a Small and Intricate Machine, by Halcolm Ellis, was presented in the absence of the author by Nathan W. Perkins, Jr., of Newark, N. J. This paper described the methods used in designing an intricate machine so that it might be assembled quickly and economically, and developed quite fully the methods employed in gathering together the large number of parts of which it is composed.

Another phase of the same subject was treated by F. P. Cox, of West Lynn, Mass., who discussed in his paper, Quantity Manufacture of Small Parts, the ways in which an organization for this purpose differs from that in the usual manufacturing plant. Discussion on these papers was participated in by Hugo Diemer, E. Puchta, J. P. Johnston, W. J. Kaup and A. C. Jackson.

A. L. DeLeeuw, Cincinnati, Ohio, in a paper on Milling Cutters and their Efficiency, outlined briefly a large number of experiments made to determine the most efficient forms of milling cutters. The paper was discussed by W. S. Huson, John Parker and A. F. Murray.

GAS POWER SECTION

A topical discussion on large blast-furnace gas-power plants was opened by A. E. Maccoun, superintendent of furnaces at the Edgar Thomson Works of the Carnegie Steel Company, and a great deal of valuable material regarding gas engine design and operating difficulties was brought out. The discussion was continued by R. H. Stevens, mechanical engineer, Homestead Steel Works; A. N. Diehl, superintendent of furnaces, Duquesne Steel Works; A. L. Hoerr, steam and hydraulic engineer, National Tube Company; H. J. Freyn, assistant engineer of construction, Illinois Steel Company, and others.

This was followed by a report on the recent work of the United States Bureau of Mines, prepared by S. B. Flagg and C. D. Smith, engineers connected with the Fuel Testing Station at Pittsburg, and presented by the latter. This paper related principally to the recent work in gas producers, and the experiments in briquetting low-grade fuels for various uses.

On Wednesday morning the ladies were conducted through the Margaret Morrison Carnegie School for Women, connected with the Carnegie Technical Schools, after which they proceeded through Schenley Park to the Pittsburg Golf Club, where luncheon was served.

In the afternoon, the Ladies' Committee gave a tea for the visiting ladies at the Hotel Schenley, and in the evening a visit was made to the International Art Exhibit at the Carnegie Institute, adjacent to the hotel.

THURSDAY MORNING—MISCELLANEOUS SESSION

At the session on Thursday morning, four papers on miscellaneous subjects were presented, and one was read by title. R. T. Stewart, of Pittsburg, presented in connection with his paper Stresses in Tubes, the results of a very elaborate investigation which showed that the stresses in the wall of a tube exposed to external fluid pressure are of the same character as those in a column having ends fixed in direction. In connection with the presentation of this paper, Professor Stewart contributed to the Library of the Society a large volume containing detailed records of tests on tubes extending over a number of years. A unanimous vote of thanks was tendered to Professor Stewart for his gift.

In the absence of the author, Perry Barker presented a paper on The Purchase of Coal, by D. T. Randall, in which attention was called to the possibilities of greater fuel economy through the purchase of coal suited to the particular use for which it is intended, under detailed specifications and guaranteed analyses. Discussion on this paper was offered by R. C. Carpenter, W. F. M. Goss, E. D. Meier, C. W. Rice and C. W. Baker.

The next paper, Energy and Pressure Drop in Compound Steam Turbines, by F. E. Cardullo, of Durham, N. H., proposed an empirical formula and a graphical method for determining the power development in each stage of a turbine. Discussion was offered by W. H. Herschel, C. H. Peabody and W. D. Ennis.

The paper by L. S. Marks, The Pressure-Temperature Relations of Saturated Steam, not being adapted for discussion in open meeting, was read by title only, publication having been made in The Journal for May 1911.

G. C. Anthony, of Tufts College, Mass., presented the last paper of the session on A Pressure Recording Indicator for Punching Machinery, a summary of a large number of experiments made to determine the power required for punching plates of various materials with punches of different types. This was accomplished by the use of an ordinary steam-engine indicator operated by hydraulic pressure transmitted from a specially constructed punching die. R. C. Carpenter and Julian Kennedy discussed the paper.

THURSDAY AFTERNOON AND EVENING

After an early luncheon, those who desired to visit the works of the National Tube Company at McKeesport took special cars from the hotel and proceeded directly to the works. At the same time the remainder of the members and ladies started on an excursion up the Monongahela River by special boat, stopping on the return trip at McKeesport for the party which had meanwhile completed its inspection of the tube plant. Music and refreshments were provided on the boat, and the trip proved most enjoyable in every way, giving an opportunity also to view many of Pittsburg's most notable industries.

Thursday evening was devoted to a reception by the local membership to the visiting members and guests at the Hotel Schenley. A number of persons prominent in social and business circles in Pittsburg had been invited to attend, and the evening was greatly enjoyed by all. There was dancing throughout the evening and supper was served from 10:30 to 12:30.

FRIDAY MORNING—STEEL WORKS SESSION

At the session on Friday morning, some of the recent developments in steel works practice were brought up and discussed. Methods of supplying air to blast furnaces were covered by the paper, Commercial Application of the Turbine Turbo-Compressor, by R. H. Rice, of West Lynn, Mass., and another on Reciprocating Blast Furnace Blowing Engines, by W. Trinks, of Pittsburg. These papers were discussed together by J. E. Johnson, Jr., C. J. Bacon, Julian Kennedy, F. E. Cardullo, H. J. Freyn and Joseph Morgan.

The Society was privileged to have another new development presented by Barthold Gerdau, of Düsseldorf, Germany, who came to this country for the purpose of presenting his paper on Power Forging, with Special Reference to Steam-Hydraulic Forging Presses. Discussion was offered by J. I. Rogers and W. E. Hall.

FRIDAY AFTERNOON

Two inspection trips were available for Friday afternoon and the parties formed proceeded, one to the works of the Carnegie Steel Company at Duquesne by special cars, and the other to the works of the Mesta Machine Company at West Homestead by special cars and train from the Union Depot. At the steel works opportunity was given to inspect every stage of the manufacture of steel, from the

unloading of the ore to the shipping of the finished material. Notable features were the freezing process for drying air supplied to the blast furnaces, and blowing engines operated by blast furnace gas.

At the Mesta Machine Company's works the party saw in process of erection a large four-stage air compressor, a twin rolling mill engine of 20,000 horsepower, a large gas engine, and a motor-driven shear capable of cutting a bar of cold steel 7 inches square. In the foundry, gear molding machines were in operation, and a heat of vanadium steel was poured, while in the forge shop steam-hydraulic forging presses were seen in operation. After luncheon had been served, the party returned to Union Depot by special train.

FRIDAY EVENING—SMOKER

The Spring Meeting was enjoyably concluded on Friday evening with a smoker and entertainment given to The American Society of Mechanical Engineers and guests by the Engineers Society of Western Pennsylvania, in the rooms of the Union Club, in the Frick Building. Brief speeches were made by E. M. Herr, Elmer K. Hiles, E. D. Meier, and Calvin W. Rice. George H. Neilson, of Pittsburg, delivered a very amusing address under the title, A Near History of Crucible Steel. Throughout the evening entertainment and refreshments were most generously furnished, and a spirit of good fellowship prevailed. This smoker formed a most pleasing climax to a very successful meeting.

The ladies were entertained throughout the day beginning with a trip through the parks and residential parts of the city in motor cars, after which the party inspected the works of the H. J. Heinz Company, where the officials entertained at luncheon. After leaving the works, the party motored to the Allegheny County Club at Sewickley, sixteen miles below Pittsburg on the Ohio River, where tea was served.

During the entire meeting the Ladies' Committee, Mrs. Chester B. Albree, Chairman, provided most hospitably for the pleasure of the visiting ladies, and in many other ways added greatly to the social features of the convention.

At the closing session on Friday morning, the following resolution was adopted by rising vote, in order to express to all concerned the appreciation of the visiting members for the elaborate preparations made for their convenience and pleasure by the local members, companies and institutions and for the cordial hospitality displayed on every side:

WHEREAS, The American Society of Mechanical Engineers, assembled in convention May 30 to June 2, 1911, at Pittsburg, Pa., has received a most cordial and spontaneous welcome from the members and friends of the Society in Pittsburg and vicinity; and has had the splendid coöperation and support of the local committee, through their tireless efforts on behalf of the Society, and their faultless preparation for the meeting, without which a convention of so marked a degree of excellence would have been impossible; and

WHEREAS, the visiting members and guests have been the recipients of the delightful entertainment bountifully provided, and have had the opportunity to view many of the industrial wonders and other notable attractions of this remarkable center;

BE IT RESOLVED: That on behalf of the Society and of the visiting members and guests, a vote of thanks be extended to all who have participated in these substantial evidences of friendship and good-will, with the assurance that such a formal resolution is but a poor and outward symbol of the deep sense of gratitude which each visitor personally feels; further, that the Secretary be instructed to extend the thanks and appreciation of the Society, by written letter, to the local Executive Committee, the Ladies' Committee, and the other local committees; to the Foundry and Machine Exhibition Company, the Universal Portland Cement Company, the Westinghouse Companies, the National Tube Company, the Mesta Machine Company, the Carnegie Steel Company, and other organizations which have opened wide their doors or provided entertainment; to the educational and art institutions and clubs of the city, which the guests have taken great pleasure in visiting; to the Engineers' Society of Western Pennsylvania for their hospitable entertainment; and to Dr. Barthold Gerdau, who came from abroad to present his important paper.

MEETINGS OF THE SOCIETY

PHILADELPHIA MEETING, JUNE 3

A meeting of the Society was held in Philadelphia on June 3, at which the subject of Fuel Testing, presented at the meeting in that city on April 22, was continued. S. B. Flagg read a paper on the work of the United States Fuel Testing Bureau, in which, in addition to outlining the work on fuel testing and the testing of furnaces for proper combustion of the fuels, he showed slides and explained the work of prevention of mine explosions and the training of rescue parties. The paper was discussed by Messrs. J. C. Parker, James Christie, J. E. Gibson, C. A. Blatchley, Schwaab, Ray and Kriesinger.

ST. LOUIS MEETING, JUNE 7

Engineers of all branches of the profession, to the number of 220, assembled at dinner in the large dining room of the Mercantile

Club, St. Louis, on June 7, the arrangements for the occasion being in charge of the Engineers Club of St. Louis. At the conclusion of the dinner J. D. von Maur, President of the Engineers Club, explained, in his capacity of toastmaster, how the five societies, the American Society of Civil Engineers, the American Institute of Electrical Engineers, The American Society of Mechanical Engineers, the American Society of Engineering Contractors, and the Engineers Club, had got together and held a number of joint professional meetings, each under the auspices of one of these organizations, that all had found pleasure and profit in the discussions and that the social features had created better understandings and professional acquaintances which had generally ripened into friendship.

M. L. Holman, Past-President of The American Society of Mechanical Engineers and of the Engineers Club, was then introduced and told humorously of many personal reminiscences of early engineering in St. Louis, including the development of the water works and the building of the great Eads Bridge. In conclusion, he urged close association among all engineers.

E. D. Meier, President of The American Society of Mechanical Engineers, who followed Mr. Holman, congratulated the Engineers Club on its success in bringing engineers of all branches together. He explained how various societies were formed in the past in the belief that three or four great national bodies could divide the profession according to natural cleavage, and how it had now become apparent that perhaps a hundred or more branches of engineering must be recognized, although the professional needs of these could be satisfied by existing societies, delegating experts in each such branch to look after its interests, and possibly forming sections where the importance of the subject required it. This, he said, would at the same time make the administrative activities of the national body available for all these branches and recognize the advantages of social gatherings at conventions in familiarizing engineers with the work and capacity of others in the same or correlated lines, and would finally raise the profession in the social recognition of the American people to the high position to which it is entitled. He compared the scepticism of the community less than forty years ago regarding the St. Louis bridge with the readiness with which much greater and more hazardous works of engineering are today accepted as possible.

C. M. Woodward, Past-President of the Engineers Club and founder of the first manual training school of the country in St. Louis, followed with a happy speech, replete with personal reminiscences,

expressing his rejoicing over the fact that whereas he had only taught engineering, many present who had graduated from his training had done things. He related also how he with his students rode on the first of the fourteen locomotives assigned to test the Eads Bridge and how the engineer was so agitated at the supposed danger of the trip that he reversed his engine at the signal to go ahead.

Col. Ed. Devoy followed with a humorous account of his own trepidation over hauling a three-and-a-half ton block of coal over the bridge to take part in the procession. He urged engineers to stand together and make their influence felt at the very inception of public works, thus preventing them from becoming the playthings of politicians who did not understand their merits.

The enthusiasm in the new-found sense of comradeship among engineers of all branches was proof that this get-together movement fills a genuine need and will spread country wide to the benefit of the profession. The plan of a simple dinner followed by a free discussion of the good of the order was so successful that it may be urgently commended to members of the Society in other engineering centers.

AN EFFORT TOWARD COÖPERATION

On June 15, the President of the Society, Colonel Meier, invited several members to a luncheon at the Machinery Club to meet Capt. A. M. Hunt, chairman of the Committee on Meetings of this Society in San Francisco, and prominent also in the work of other engineering societies. Those invited were A. C. Humphreys, Charles W. Baker, E. G. Spilsbury, W. M. McFarland, H. G. Stott and Calvin W. Rice.

A topic discussed was one which The American Society of Mechanical Engineers has been specially active in promoting, through meetings with other societies in different cities, that of the getting together of engineers in different fields for coöperation and the general advancement of the profession as a whole. Prominent among these efforts have been the meetings at Boston at one of which eight presidents and the representatives of many organizations were present and the recent meeting in St. Louis noticed elsewhere. The work of Captain Hunt in bringing together, as he has, engineers on the Pacific slope irrespective of their society affiliations, was most highly commended.

From the composition of the party called together for this occasion it is evident that each is representative of the spirit of coöperation

through association with various engineering societies and the belief was expressed that definite plans which were discussed would serve as a means of promoting some general meetings to which the members of all engineering societies would be invited.

STUDENT BRANCHES

MISSOURI UNIVERSITY

The Missouri University Student Branch held the concluding meeting of its season on May 22, the Freshmen and Sophomore classes of the University being invited guests. Short talks on subjects of interest to the membership were given by Prof. H. W. Hibbard, Mem. Am. Soc. M. E., Prof. E. A. Fessenden, Jun. Am. Soc. M. E., O. N. Edgar, P. A. Tanner, H. W. Price, F. B. Thacher, F. T. Kennedy, and A. C. Edwards.

PENNSYLVANIA STATE COLLEGE

At the meeting of the Pennsylvania State College Student Branch on May 19, the following officers were elected for the year 1911-1912: J. A. Kinney, president, R. M. Diehl, vice-president, H. S. Rodgers, secretary, and H. E. Davis, treasurer. An interesting lecture on Cleaning of Blast Furnace Gas was given by S. K. Varnes.

SIBLEY COLLEGE

At the meeting of the Sibley College Student Branch held on April 26, Prof. C. F. Hirshfeld, Jun. Am. Soc. M. E., addressed the membership on Modern Tendencies in Gas Power Machinery.

The following officers were elected at the meeting of May 10: F. E. Yoakem, president, G. W. Curtiss, vice-president, L. B. Timmerman, recording secretary, S. D. Mills, treasurer. Certain changes in the constitution and by-laws of the organization were also considered and approved.

On May 13, L. R. Pomeroy, Mem. Am. Soc. M. E., gave an address upon Scientific Accounting, in which he emphasized the importance of the human element in applying the methods of scientific management.

LELAND STANFORD UNIVERSITY

The meeting of the Leland Stanford Mechanical Engineering Society on May 3 was devoted to the election of the following officers: C. H. Shattuck, president; A. G. Budge, vice-president, and C. W. Scholefield, secretary-treasurer. A number of applications were approved for membership.

UNIVERSITY OF CINCINNATI

At the regular monthly meeting of the Student Branch of the University of Cincinnati on May 26, the following officers were elected: C. J. Malone, president, C. W. Lytle, vice-president, Joseph Herman Schneider, secretary-treasurer. A paper on Molding and Foundry Practice was presented by C. W. Lytle and was discussed by the members.

UNIVERSITY OF ILLINOIS

The final meeting of the season was held by the University of Illinois Student Branch on May 12. A paper on a filing system used in a drafting room of a plumbing concern was read by A. F. Connard, and F. J. Schlink gave a talk on the filing system used in a drafting room of a construction and drainage company.

YALE UNIVERSITY

At a meeting of the Student Branch of Yale University held on May 3, a paper on Scientific Management, with special reference to the Piece Rate System, was presented by Frank B. Gilbreth, Mem. Am. Soc. M. E. F. M. Jones was elected president of the organization for the year 1911-1912.

MEETING OF THE COUNCIL

MAY 30

A meeting of the Council was held on Tuesday, May 30, in the Hotel Schenley, Pittsburg, Pa. There were present, E. D. Meier, presiding, Charles Whiting Baker, George M. Brill, W. F. M. Goss, James Hartness, E. M. Herr, H. G. Reist, Jesse M. Smith, Worcester R. Warner, C. J. H. Woodbury, representing the Committee on Meetings, and the Secretary.

The Council received a delegation from Cleveland, Ohio, which presented an invitation from the Cleveland Engineering Society, the Cleveland Chamber of Commerce and the Cleveland Manufacturers Club, offering the City of Cleveland as the meeting place of the Society in the Spring of 1912.

The resignation of Alex. C. Humphreys as a member of the Executive Committee was received and accepted with regret. H. G. Reist was elected to fill this vacancy.

Voted: That advance copies of papers may be printed for local committees and professional sections without consideration by either the Committee on Meetings or the Publication Committee, when within the appropriation of the local committee or section, as the case may be.

Voted: That the following note appear on all copies of such papers: This paper is to be presented at a meeting of The American Society of Mechanical Engineers in ———— on ———— and is printed by the Committee in charge of that meeting under its authority.

Voted: To confirm the basis of affiliation between this Society and the Providence Association of Mechanical Engineers.

Voted: That the following Committee, nominated by the members of the Society in New Haven, E. S. Cooley, E. H. Lockwood, L. P. Breckenridge, F. L. Bigelow, H. B. Sargent, be appointed in charge of the meetings of the Society in New Haven for the remainder of the present calendar year.

Voted: To appropriate $75, subject to the approval of the Finance Committee, for the conduct of meetings in New Haven for the balance of the fiscal year.

Voted: To approve the recommendation of the Publication and Finance Committees for the following appropriations:

Distribution of Transactions, Vol. 30	$209.00
Distribution of Vol. 30 and Vol. 31 to members joining the Society December 1908–1909	316.83
For completion of Transactions, Vol. 31	500.00
For text section of The Journal	1400.00
For advertising section of The Journal	3900.00
	$6325.83

Voted: That the policy of the Committee on Meetings be heartily commended in its provision of sub-committees to deal with special industries or departments of engineering. Such sub-committees appear to be an excellent method by which the Society can give proper attention to departments of engineering not represented by organized groups or sections of the Society. When, however, any group of members of the Society, interested in a special branch of engineering, desires to organize as a professional section under the Rules, the sub-committee dealing with said branch should be discontinued or merged into such section.

Voted: To approve the recommendation of the Committee on Constitution and By-Laws, presented by Jesse M. Smith, temporary Chairman.

Voted: To appoint H. G. Stott, upon the recommendation of the Committee on Constitution and By-Laws, to fill the vacancy on that Committee caused by the death of Charles Wallace Hunt.

The following proposed amendment to By-Law 20 was read:

The annual subscription price of The Journal shall be one dollar to Honorary Members, Life Members, in the various grades, Members, Associates, Juniors and Student-Affiliates; two dollars to Affiliates of the Society paying dues, members of affiliated societies who do not pay dues, members of the American Institute of Electrical Engineers, members of the American Institute of Mining Engineers, members of the American Society of Civil Engineers, libraries and colleges; five dollars to non-members not included in the above.

Voted: To amend Rule 24 to read as follows:

Engineers and others not members of the American Society, but desiring to participate in the meeting of the section, may enroll themselves as affiliates as heretofore provided, with the approval of the Executive Committee of the section. Such affiliates shall have the privilege of presenting papers and taking part in the discussions. They shall pay three dollars per annum, which

shall be due and payable in advance, on October 1, of each year of their enrollment, and shall thereby be entitled to receive the regular issues of The Journal for a period covered by their dues.

Voted: To approve the following new rule, to be inserted between the present Rules 27 and 28:

The dues of a student to secure affiliation with the Society shall be one dollar per annum, which shall be due in advance of January 1st, of each year.

Voted: To amend Rule 29 to read:

The American Society of Mechanical Engineers will furnish monthly issues of The Journal to all members of affiliated organizations who are not members of The American Society of Mechanical Engineers upon the payment by each of one dollar per year, such payment being due in advance on January 1 of each year. The American Society of Mechanical Engineers will furnish gratis to each affiliated body, extra copies of advance papers for use at its meetings, the number furnished to be agreed upon at the discretion of the Secretary.

Voted: To accept the resignations of R. S. Woodward, E. P. Jump and R. E. Lee.

Voted: To appoint William Kent, W. B. Snow, M. L. Cooke and J. R. Bibbins a committee, with power to increase their number, on the subject of the standardization of catalogues, to report to the Council at a later date.

Voted: To refer to the Tellers of Election of Officers a letter received from George A. Orrok, in regard to improving the form of ballot for officers, with the request that they prepare a report to the Council at a later meeting.

Voted: To confirm the appointment by the President of Charles R. Richards as Honorary Vice-President to represent the Society at the National Irrigation Congress in Chicago, December 5–9, 1911.

Voted: To appoint H. G. Reist on the Council of the American Association for the Advancement of Science.

Voted: To appoint, on the recommendation of the Executive Committee, W. F. M. Goss, on the John Fritz Medal Board, to fill the vacancy caused by the death of Charles Wallace Hunt.

Voted: To appoint, on the recommendation of the Executive Committee, F. R. Hutton, on the Committee of Society History, to fill the vacancy caused by the death of Charles Wallace Hunt.

The minutes of the meeting of April 10 were approved as written.

The meeting adjourned to June 1.

JUNE 1

A meeting of the Council was held on June 1, on board the boat "Sunshine," during the Pittsburg meeting. There were present E. D. Meier, President, Charles Whiting Baker, E. M. Herr, H. G. Reist, W. F. M. Goss, George M. Brill, Jesse M. Smith, and the Secretary.

Voted: That the Spring Meeting of 1912 be held in Cleveland.

Voted: That the matter of second-class rates of postage be referred to the Executive Committee with power.

Voted: To approve the formation of a Student Branch at Lehigh University.

NECROLOGY

MORRIS LANDA ABRAHAMS

Morris Landa Abrahams died on March 28, 1911, at San Antonio, Texas. Mr. Abrahams was born on March 21, 1885, at Austin, Texas, and after a preparatory education at the Hogsett Military Academy, Danville, Ky., and the Agricultural and Mechanical College of Texas, entered Cornell University, from which he was graduated in 1905 with the degree of M. E. Previous to his matriculation at Cornell he had acquired practical experience with the Deming Company, Salem, Ohio, in their drafting room, and with the Dean Brothers Steam Pump Works, Indianapolis, Ind., as assistant to the foreman of the testing floor. In 1907 he entered the employ of Walter S. Timmis, consulting engineer, New York City, where he engaged in power plant design, printing plant layouts, the development of a patent elevator safety device, heating and ventilation, and other similar phases of mechanical engineering. Later in the same year he left Mr. Timmis to become a member of the engineering force of the Victor Talking Machine Company in Camden, N. J. In 1910 he entered the service of the Government as assistant chief inspector attached to the Canal Commission, with headquarters at Washington, and retained this position until shortly before his death, when illness obliged him to resign his duties.

PAUL RAYMOND BROOKS

Paul Raymond Brooks was born in Chicago, Ill., August 17, 1877, and was educated at the Chicago Manual Training School and the Massachusetts Institute of Technology, from which he was graduated with the degree of B.S. in 1900. Following his graduation he entered the employ of the Chicago, Burlington & Quincy Railroad, where he began in the locomotive shop as an apprentice and worked his way through successive promotions to the position of acting foreman of the Burlington roundhouse of the company. In 1904 he became Western mechanical editor for the McGraw Publishing Company, New York. The following year he became a sales engineer for the Railway Appliances Company and the Otto Gas Engine Works,

and in 1908 general sales manager for the Machine Sales Company, Peabody, Mass. In 1909 he associated himself with the Union Bag & Paper Company, Sandy Hill, N. Y., as mechanical engineer, and at the time of his death on March 11, 1911, was president and superintendent of the Del Monte Irrigation Company, Texas.

JOHN A. CALDWELL

John A. Caldwell was born August 12, 1849, at Johnstone, Scotland, and was educated at the Glasgow School of Design and Mechanical Engineering, from which he was graduated in 1867. He served his apprenticeship as a pattern maker with the firm of Tweedale & Robinson, Johnstone, and as draftsman with Lawson & Son, Glasgow, from 1863 to 1868. In 1870 he came to the United States and was employed by Mackintosh, Hemphill & Company of Pittsburg, for whom he designed large rolling mills and blast engines, and had entire charge of relining the Schoenberger blast furnaces and rebuilding the hot blasts at Pittsburg, as well as the erection of two new blast furnaces at Port Washington, Ohio. He subsequently designed all the locomotives built by the National Locomotive Works, Connellsville, Pa., the Alice stamp mill and the Moulton mill at Butte, Mont., the elevator service for Z. C. M. I. at Salt Lake City, Utah, the stamp mill at Parrall, Mexico, the numerous filter plants for the Hyatt Pure Water Company, including the installation of the city plant at Oakland, Cal., and was in charge of the new engine and boiler installations for the H. W. Johns Manufacturing Company, Brooklyn, N. Y., contracted for and superintended the erection of numerous blower plants, water pumps and pumping stations for the P. H. & F. M. Roots Company, including the pumping station at Little Falls, N. J., and contracted for, designed and superintended the erection of numerous water-tube boiler plants, including piping, in conjunction with James Beggs & Company. In 1899 Mr. Caldwell became business manager for the American Stoker Company, New York, and in 1901 opened an office of his own in the same city, making a specialty of boiler room economies, particularly stokers and CO_2 recorders. He died on April 7, 1911.

CHARLES J. LARSON

Charles J. Larson was born on March 2, 1872, at River Falls, Wis. His early education was obtained at the State Normal School, Morehead, Minn., and at Macalester College, St. Paul, Minn., and his

technical training at the Rose Polytechnic Institute, Terre Haute, Ind., from which he was graduated in 1900 with the degree of B.S., and from which he also received the degree of M.E. in 1909. In 1900 he entered the employ of the Allis-Chalmers Company at Milwaukee, as erecting engineer, and from 1905 to 1907 had supervision of the installation, operation and testing of machinery furnished by this company in the Eastern territory. Among the prominent engineering works which he superintended in this capacity were the Washington drainage system and water works, the Boston sewerage system, the Boston elevated railway, the New York subway engines, the New York high-pressure service, and the Midvale Steel Company's plant and machinery for the Connecticut Railway Company. In 1904 he installed and had charge of the operation of the 6000-h.p. Allis-Chalmers-Bullock exhibit at the St. Louis Exhibition.

He was forced to resign his work in 1908, because of ill-health and accepted a position as chief engineer of the Union Electric Company, Dubuque, Iowa, which he held at the time of his death on April 6, 1911.

Mr. Larson was a member of the American Institute of Electrical Engineers and the National Electric Light Association, and had made many valuable contributions to technical journals.

EDWARD B. YARYAN

Edward B. Yaryan who was born in Toledo, Ohio on April 10, 1881, died in that city on April 28, 1911. Mr. Yaryan began his professional career in 1896 with the Toledo Heating and Lighting Company as a steam engineer. From 1900–1902 he was manager of a central station at Evanston, Ill., and was at the same time employed as superintendent of construction for the Oak Park Yaryan Company of Oak Park, Ill. The following year he re-entered the service of the Toledo Heating and Lighting Company as its superintendent, leaving there in 1906 to become vice-president of the Maclaren & Sprague Lumber Company of Toledo. In 1908–1909 he became superintendent of the Yaryan Process Company of the same city, and in the following year of the Yaryan Naval Stores Company, in the service of which latter firm he later went to Gulfport, Miss., where he remained until shortly before his death.